

REMARKS

This amendment is submitted in response to the Office Action dated May 3, 2005. Claims 1, 8, 10, 17, 19, and 26 have been amended herein and claims 1-27 remain pending. No new matter has been added, and the amendments place the claims in better condition for allowance. Applicants respectfully request entry of the amendments to the claims. The discussion/arguments provided below reference the claims in their amended form.

CLAIMS REJECTIONS UNDER 35 U.S.C. § 112

Claims 1-27 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 8, 17, and 26 have been amended in view of the grounds of rejection. Namely, claim 8 (and similarly for claims 17 and 26) has been amended to remove the possibly confusing reference to "the lapse of time" in describing the time start point of the probability distribution, and now recites in material part, "wherein the time at which said first job is finished is set as the time start point of said probability distribution" as properly suggested in the Office Action.

Applicants respectfully traverse grounds for rejecting independent claims 1, 10, and 19 under 35 U.S.C. § 112, second paragraph. At reference item 2 on page 2, the Office Action asserts that in the second step, "the probability distribution for times at which execution of the first job is formed is determined" but then goes on to incorrectly assert that "in the second step the second job is executed based on the result of the probability distribution function." Prior to the present Amendment, the second element of claim 1 recited "probability distribution forming means for determining a probability distribution for times at which execution of said first job occurs" and included no mention of scheduling the second job in any manner. It is the third and last step, which recites "execution timing means for scheduling execution of said second job in accordance with said probability distribution" that relates the determined probability distribution with the scheduling of the second job. Applicants contend that it was clear from the claim elements, considered together, that occurrences of the first, irregularly occurring job, are used to determine a probability distribution that is in turn used to schedule the regularly occurring second job.

Applicants traversal notwithstanding, claims 1, 10, and 19 have been amended herein to further clarify the foregoing relation and distinction between the second and third elements of the independent claims. Namely, claim 1 (and similarly for claims 10 and 19) has been amended such that the second element now recites, in part, "...determining a probability distribution in accordance with times at which execution of said first job occurs" (emphasis added). Applicants urge that the relation and significance of the respective features of the second and third elements of claims 1, 10, and 19 have thus been made sufficiently clear under the requirements of 35 U.S.C. § 112, second paragraph, and request withdrawal of the rejections under 112, second paragraph of claims 1, 10, 19, and all claims depending therefrom.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-2, 10-11, and 19-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 6,557,120, issued to Nicholson et al. (hereinafter *Nicholson*). Furthermore, claims 3-4, 12-13, and 21-22 have been rejected under 35 U.S.C. 103(a) as being unpatentable over *Nicholson* in view of U.S. Patent No. 5,522,070, issued to Sumimoto (hereinafter *Sumimoto*). Applicants traverse the foregoing rejections as they may be applied to the claims as amended herein for the following reasons.

Applicants' invention is directed to controlling execution sequencing (i.e. scheduling) of multiple jobs some of which occur irregularly, such as read/write memory accesses, and some of which occur at regular time intervals, such as system diagnostic applications. In particular, the invention includes means and steps for scheduling the regularly occurring processes in accordance with predicted patterns of occurrence of the irregularly occurring processes in a manner that minimizes scheduling conflicts and maximizes scheduling throughput. For example, independent method claim 10 comprises, in part, a step of determining a probability distribution in accordance with times at which the irregularly occurring job is executed, and further includes a step of scheduling execution of said second job in accordance with said probability distribution. In this manner, the probability distribution determined from the irregular occurrences of the first, irregular-type job is used as the guidepost for more effectively scheduling the second, regularly occurring job.

Nicholson discloses a system/method for testing software reliability by accelerating the job execution conditions to simulate execution over more extended periods. As summarized in

the Abstract, lines 14-21, "[t]he testing includes random scheduling of tasks and sleep intervals reflecting expected usage patterns, but at a faster pace to efficiently sample the state space to detect sequence of operations that are likely to result in failures in actual use. The method and system include using pseudo-random numbers to schedule the tasks ..." After careful review of *Nicholson*, and with continued reference to the grounds for rejecting independent claims 1, 10, and 19, Applicants contend that *Nicholson* fails to disclose or suggest steps/means for:

"executing a plurality of jobs, wherein said plurality of jobs includes a first job executed at irregular time intervals and a second job executed at regular time intervals,"

"determining a probability distribution in accordance with times at which execution of said first job occurs," and

"scheduling execution of said second job in accordance with said probability distribution."

At reference item 4 on page 3, the Office Action asserts that in Fig. 5 and col. 8, lines 55-68, *Nicholson* discloses executing a plurality of jobs, wherein said plurality of jobs includes a first job executed at irregular time intervals and a second job executed at regular time intervals. Applicants disagree. Col. 8, lines 55-68 describes scheduling various tasks and sleep periods at random (i.e. irregular) intervals, such as by using a Gaussian distribution, but does not disclose scheduling tasks in a regular, or other non-random manner that can be contrasted with the irregularly executing tasks. On page 4, the Office Action qualifies that while *Nicholson* does not clearly explain the detail of execution of regular and irregular time intervals, server operations are interpreted as irregular operations and periodic operations are considered as regularly occurring. *Nicholson's* failure to discuss the *distinction* between regularly and irregularly scheduled tasks as it relates to the system's functionality is a critical gap since Applicants' proposed invention is fundamentally based on such a distinction and processing steps performed pursuant to such a distinction.

Regarding the second claim element of claims 1, 10, and 19, the Office Action asserts that at col. 10, lines 23-33, *Nicholson* discloses probability distribution forming means for determining a probability distribution for times at which execution of said first job occurs. Referring back to Applicants' remarks and clarifying amendment to claims 1, 10, and 19, pursuant to addressing the aforementioned rejections under 35 U.S.C. 112, second paragraph, it is clear that the distribution function in the second claim element is determined in accordance

with occurrences of the first, irregularly occurring job. As explained at col. 10, lines 23-33, the Abstract, lines 14-21, and elsewhere, *Nicholson's* system uses a probability distribution to randomly schedule start times for various tasks in a manner simulating regular operations. Nowhere does *Nicholson* disclose or suggest that the probability distribution used for scheduling is determined or otherwise derived from the occurrences of any type of job. Instead, *Nicholson* describes distributions that are generated using pseudo-random numbers and "seeding," and none of which are determined in accordance with occurrences of irregularly occurring tasks (see col. 10, lines 45-60).


Regarding the third claim element of claims 1, 10, and 19, the Office Action asserts that at col. 10, lines 45-60, *Nicholson* discloses means for scheduling execution of said second job in accordance with said probability distribution. At col. 10, lines 45-60, *Nicholson* describes various techniques for generating probability distributions using pseudo-random numbers and "seeding." *Nicholson* also discloses scheduling tasks in accordance with a random distribution (col. 10, lines 27-28, describing sleep period scheduled along with a particular task per a random distribution). Nowhere, however, does *Nicholson* disclose scheduling a regularly occurring task in accordance with a random distribution that was determined in accordance with occurrences of an irregularly occurring task as required by the antecedent limitations imposed on the third and last element of claims 1, 10 and 19 by the preceding first and second elements.

Nothing in *Nicholson* or any other art known to Applicants discloses or suggests, either individually or in combination, steps of determining a probability distribution in accordance with times at which execution of an irregularly occurring first job occurs, and scheduling execution of a regularly occurring second job in accordance with the so-determined probability distribution, as recited by Applicants independent claims 1, 10, and 19. Applicants thus contend that claims 1, 10, and 19 and all claims depending therefrom are not rendered obvious by the disclosure of *Nicholson*.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that the pending claims have been placed in condition for allowance and favorable action is respectfully requested. Applicants invite the Examiner to contact the undersigned attorney of record at (512) 343-6116 if such would further or expedite the prosecution of the present Application.

Respectfully submitted,



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